United States Patent [19]

Belangee et al.

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[54] **CLOSED LOOP CONTROL OF COMPRESSIBLE FLUID ADDITION TO A MIXTURE OF SUCH FLUID AND A LIQUID**

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[52] **U.S. Cl.** **521/133**; 222/55; 222/57; 521/917

[58] **Field of Search** 222/55, 57; 521/133, 521/917

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,908,862	9/1975	Chandra et al.	264/328.6
3,984,510	10/1976	Chandra et al.	264/40.1
4,008,829	2/1977	Chandra et al.	264/328.6
4,090,695	5/1978	Stone et al.	222/63
4,157,427	6/1979	Ferber	521/917

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[57] **ABSTRACT**

In reaction injection molding facilities of the recirculation type, a closed loop system controls the addition of a gas to a mixture of liquid and gas. The system takes a sample volume of the liquid and forces a plunger into the sample volume. The distance travelled by the plunger between two preset pressures of the sample is measured and compared to a reference distance to get a control signal that is used to operate a valve that controls gas admission to the mixture.

22 Claims, 3 Drawing Figures